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**Datasheet for the decision  
of 28 August 2013**

**Case Number:** T 1227/11 - 3.3.06

**Application Number:** 04734918.8

**Publication Number:** 1627036

**IPC:** C11D 3/386, C11D 3/50,  
C11D 3/382, C11D 3/22,  
C11D 3/02, C11D 3/20,  
C11D 11/00

**Language of the proceedings:** EN

**Title of invention:**  
Process for releasing fragrance

**Patent Proprietor:**  
KAO CORPORATION

**Opponent:**  
Henkel AG & Co. KGaA

**Headword:**  
Demulsifying agent/KAO CORPORATION

**Relevant legal provisions:**  
EPC Art. 123(3)  
RPBA Art. 12(2)(4)  
RPBA Art. 13(3)

**Relevant legal provisions (EPC 1973):**  
EPC Art. 52(1), 56, 83, 114(2)

**Keyword:**

"Admissibility of auxiliary request 1: yes"

"Admissibility of auxiliary request 2 submitted during oral proceedings: yes"

"Sufficiency of disclosure (main request and auxiliary request 1): no - identification of emulsifier/demulsifier pairs suitable for carrying out the invention not possible without undue burden"

"Compliance with the requirements of Article 123(3) (auxiliary request 2): yes"

"Sufficiency of disclosure (auxiliary request 2): yes"

"Inventive step (auxiliary request 2): yes - non obvious alternative"

**Decisions cited:**

-

**Catchword:**

-



Case Number: T 1227/11 - 3.3.06

**D E C I S I O N**  
of the Technical Board of Appeal 3.3.06  
of 28 August 2013

**Appellant:**  
(Opponent)

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**Decision under appeal:**

**Decision of the Opposition Division of the  
European Patent Office posted 4 April 2011  
rejecting the opposition filed against European  
patent No. 1627036 pursuant to Article 101(2)  
EPC.**

**Composition of the Board:**

**Chairman:** B. Czech  
**Members:** L. Li Voti  
U. Tronser

## Summary of Facts and Submissions

- I. The present appeal by the Opponent is from the decision of the Opposition Division to reject the opposition against European patent no. 1 627 036.
- II. In its notice of opposition the Opponent had sought the revocation of the patent on the grounds of Articles 100(a) EPC 1973, alleging lack of novelty and inventive step, and 100(b) EPC 1973.

In support of its arguments, the Opponent had cited *inter alia* document D4: EP 0 965 326 A1.

- III. The Opposition Division found in its decision, in particular, that the claimed invention was sufficiently disclosed and that the subject-matter of granted claims 1 to 5 was novel and involved an inventive step over the cited prior art.

The independent product claims 2 and 3 of the patent as granted read as follows:

*"2. A perfume composition comprising:*

- a) a perfume emulsified with one or more substances having emulsification actions, and*
- b) a demulsifying agent capable of demulsifying at least one of the substances having emulsification actions*

*wherein the demulsifying agent is at least one member selected from the group consisting of enzymes, alkalis, acids and mixtures thereof, and*

*wherein the enzymes are selected from the group consisting of cellulase, protease and lipase."*

*"3. A detergent composition comprising the perfume composition of Claim 2."*

- IV. In its statement setting out the grounds of appeal, the Appellant (Opponent) maintained its objections under Articles 100(a) and (b) EPC 1973. Together with said statement, it also filed documents supposed to illustrate the meaning of the terms "emulsion", "dispersion" and "suspension".
- V. In its reply of 29 December 2011, the Respondent (Patent Proprietor) rebutted the objections raised and defended the patent in the version as granted (main request). However, with said reply it also submitted two sets of amended claims as auxiliary requests 1 and 2.

Claim 2 according to auxiliary request 1 differs from claim 2 as granted only insofar as component a) is defined as follows:

*"a) a perfume particle obtainable by dispersing and immobilizing a perfume in the form of droplets by emulsifying with one or more substances having emulsification actions in a water-soluble matrix-forming agent, and drying the emulsion".*

Claim 3 according to auxiliary request 1 relates to a *"detergent composition comprising the perfume composition of claim 2"*.

- VI. In a telefax received at the EPO on 23 August 2013 the Appellant maintained its objections under Articles 100(a) and (b) EPC 1973 against all the requests on file. It also requested that the Respondent's auxiliary requests be not admitted into the proceedings on the ground that they did not clearly meet the requirements of Article 123(3) EPC.
- VII. In reaction to this telefax and to a communication by the Board dated 26 August 2013 and faxed to the parties on 21 August 2013, in which the compliance with the requirements of Articles 123(2) and (3) EPC and Article 84 EPC 1973 of the amended claims according to the auxiliary requests on file was generically questioned, the Respondent filed on the day before the oral proceedings further arguments together with an amended set of claims as new auxiliary request 2. This submission did not reach the Board before the start of the oral proceedings.
- VIII. At the oral proceedings held on 28 August 2013, the Respondent filed a copy of its last written submission. In the course of the oral proceedings it submitted a further amended set of claims as new auxiliary request 2 in response to objections raised during the debate concerning the issues of sufficiency of disclosure and allowability of the amendments under Articles 123(2) and (3) EPC.

The set of claims according to said new auxiliary request 2 contains four claims reading as follows:

"1. A perfume composition comprising:

a) a perfume emulsified with one or more substances having emulsification actions, wherein the emulsified perfume is obtainable by dispersing or dissolving a water-soluble matrix-forming agent in water, adding an emulsification action substance and a perfume thereto, emulsifying the mixture to form an emulsion, and then spray-drying the emulsion to form perfume particles in which the perfume components are encapsulated in the water-soluble matrix; and

b) a demulsifying agent capable of demulsifying at least one of the substances having emulsification actions

wherein the emulsification action substance is a cellulose-based emulsification action substance and the demulsifying agent is cellulase or the emulsification action substance is a protein-based emulsification action substance and the demulsifying agent is a protease."

"2. A detergent composition comprising the perfume composition of Claim 1."

"3. The detergent composition according to Claim 2, further comprising one or more members selected from the group consisting of surfactants, alkalizing agents, water softening agents, polymers, enzymes, and mixtures thereof."

"4. A process for preparing a detergent composition comprising carrying out a spray of perfume directly to the detergent composition of Claim 2 or 3."

- IX. The Appellant requested that the decision under appeal be set aside and that the patent be revoked.

The Respondent requested that the appeal be dismissed or, that the patent be maintained on the basis of auxiliary request 1 submitted with letter of 29 December 2011 or on the basis of auxiliary request 2 submitted during oral proceedings.

- X. As relevant here, the arguments of the parties can be summarised as follows:

The **Appellant** held that the invention as claimed according to the main request and the auxiliary request 1 was not sufficiently disclosed. One of the arguments submitted by the Appellant concerned the teaching of the description that the skilled person had to carry out a demulsification test in order to find suitable pairs of, on the one hand, a substance having emulsification action for the perfume (hereinafter referred to as "emulsifier") and, on the other hand, a substance capable of demulsifying the so emulsified perfume (hereinafter referred to as "demulsifier") in order to be able to carry out the invention. Since the results obtained by this test varied according to the conditions used, for example the relative concentrations of emulsifier and demulsifier, it was necessary to carry out such a test for any chosen composition. Therefore, it was not possible to carry out the invention without undue burden.



The subject-matter of the claims of the auxiliary requests were considered by the Appellant to extend beyond the content of the granted claims, since the latter related only to compositions containing emulsified perfume, i.e. liquid perfume dispersed in a liquid, whilst the auxiliary requests related to compositions containing solid particles comprising the dispersed perfume.

As regards the inventiveness of the claims according to auxiliary request 2, the Appellant stated that the comparative experiments contained in the patent in suit did not contain any comparison with a composition disclosed in document D4, representing the closest prior art, and did not show any advantage attributable to the claimed combination of features. Therefore, in the light of the disclosure of document D4, the technical problem underlying the invention could only be seen in the provision of an alternative detergent composition containing a perfume composition encapsulated in a water-soluble matrix.

The detergent compositions disclosed in examples 1 or 9 of document D4 differed from that according to claim 2 of auxiliary request 2 only insofar as they did not comprise a cellulose-based or protein-based emulsifier as a component of the encapsulated perfume composition. However, it would have been obvious to emulsify such perfume compositions with other known emulsifiers already contained in the base detergent composition, for example carboxy methyl cellulose (CMC). Furthermore, the description of D4 suggested adding a plant-type sugar to the water-soluble modified starch matrix-

forming agent already acting as emulsifier for the perfume. This was a clear indication to the skilled person that cellulose-based emulsifiers could also be used.

Finally, since amylase would degrade the starch-based matrix of the encapsulated perfume, it would have been obvious to use, instead of the starch-based emulsifier used in D4, other known emulsifiers capable of forming a water-soluble matrix, for example cellulose-based emulsifiers, which would be expected to be degraded upon use by the cellulase also present in the detergent base compositions of D4.

Therefore, the claimed subject-matter lacked inventive step over D4.

The **Respondent** submitted that

- the patent in suit disclosed specific pairs of suitable emulsifiers and demulsifiers and a specific test which could be carried out without undue burden by the skilled person; moreover, Table 1 showed that the pairs suggested explicitly in the patent in suit were able to demulsify the emulsified perfume composition; the claimed invention thus was sufficiently disclosed;

- it was clear from the description of the patent in suit that the "*emulsified perfume*" referred to in the granted claims could also be present in a solid state; therefore, the auxiliary requests complied with the requirements of Article 123(3) EPC.

As regards the inventiveness of the claims according to auxiliary request 2 the Respondent submitted that

- even though the patent in suit did not contain any comparative test with respect to a composition as disclosed in D4, the examples of the patent showed that specific pairs of emulsifier and demulsifier to be used according to claim 1 resulted in perfume benefits on the dried washed articles, which were better than those obtainable when using other pairs of emulsifier and demulsifier not covered by the claims;

- document D4 did not suggest to use a cellulose-based or protein-based emulsifier for the perfume composition encapsulated within the starch-based water-soluble matrix; moreover, since the compound forming the water-soluble matrix was also used to emulsify the perfume composition, D4 did not contain any pointer for the skilled person to add an additional emulsifier;

- the plant-type sugars mentioned in D4 were low molecular weight compounds used for lowering the softening point of the matrix-forming material to be spray-dried during formation of the encapsulated perfume and did not concern a cellulose-based material;

- D4 did not contain any suggestion that the enzymes contained in the detergent base could be helpful in demulsifying the emulsion formed upon dissolving the encapsulated perfume in order to obtain good perfume benefits on the washed articles after drying; therefore, the skilled person would not find any hint in document D4 to replace the preferred modified starch-based matrix-forming agent of the encapsulated perfume with a

different material which could be degraded by the enzymes present in the detergent base; therefore, he could arrive at the claimed invention only with the use of hindsight;

- therefore, the claimed subject-matter involved an inventive step.

## **Reasons for the Decision**

### *Respondent's main request*

1. Sufficiency of disclosure
  - 1.1 Claim 3 according to the main request concerns a detergent composition comprising the perfume composition of claim 2, i.e. a detergent composition containing an emulsified perfume and a demulsifier. In fact, as explained in the patent in suit, the expression "*perfume composition*" encompasses any type of composition containing perfumes and other suitable components, depending upon the purpose of its use, e.g. powder detergents (see paragraph [0051] of the patent in suit).

The claimed invention thus encompasses a detergent composition comprising a perfume emulsified with any type of emulsifier. As to the demulsifier, which, as pointed out by the Respondent, is a substance able to positively break up the emulsified state of the emulsified perfume upon use (see page 6, lines 47 to 48 of the patent in suit), claim 2 as granted requires that such a component is selected from the generic

classes of enzymes, acids and alkali and mixtures thereof, and in the case of enzymes, from the more specific classes of the cellulase, protease and lipase enzymes.

The claimed invention thus requires the use of a demulsifier, belonging to the above mentioned classes, which is able to demulsify the emulsified perfume under the specific conditions of use of a perfume composition according to claim 2, and more particularly, under the specific conditions of use of a detergent composition comprising said perfume composition (claim 3).

- 1.2 It is undisputed that demulsifying techniques and chemical agents suitable for performing such techniques in specific technical fields were known at the priority date of the patent in suit and belonged to the common general knowledge of the skilled person. However, the application of demulsifiers to emulsified perfumes contained in detergent compositions was not part of common general knowledge.

Therefore, in order to evaluate whether the claimed invention is sufficiently disclosed, it must be considered whether the patent in suit contains sufficient information and guidance enabling the skilled person to carry out the invention throughout its scope and without undue burden.

- 1.3 The description of the patent in suit teaches explicitly that cellulase can be used as demulsifier for perfumes emulsified with cellulose-based emulsifiers and that protease can be used as demulsifier for perfumes emulsified with protein-based

emulsifiers (page 4, lines 6 to 9 and page 6, lines 1 to 3). Moreover, it teaches that also alkali can be useful as demulsifier for cellulose-based or protein-based emulsifiers (see page 4, lines 11 to 13 and page 6, line 3).

1.3.1 The description does not contain, however, any explicit teaching or guidance with regard to the types of perfume emulsions which can be effectively broken up upon use by acids or lipases, let alone in the context of their use as a component of a detergent composition.

1.3.2 Moreover, the claimed invention is not limited to the use of those pairs of emulsifiers and demulsifiers which are expressly mentioned in the description but extends to any conceivable pair of emulsifier and demulsifier belonging to the generic classes listed in claim 2. However, the description of the patent in suit expressly acknowledges the difficulty of judging whether a chosen combination of emulsifier and demulsifier present, for example, in a given detergent product would be suitable for carrying out the claimed invention. In this respect, reference is made to paragraph [0065] of the patent in suit reading as follows:

*"...as to the judgement on whether or not the combination can be demulsified, it is difficult to prove the occurrence of a demulsification phenomenon in the form of an embodiment itself since the amount of the perfume formulated is usually 1% by weight or less, and the perfume has a very low concentration of several dozen ppm in a dissolution state upon use".*

- 1.4 Accordingly, the patent in suit describes a specific method for judging demulsification (see paragraphs [0066] and [0067]). This method includes the determination of a so-called demulsification index, based on UV-absorbance measurements. According to this test method, a demulsifier is effective if the demulsification index is 0.3 or less (see page 8, lines 21 to 38).
- 1.4.1 According to this test 100 g of a perfume emulsion are adjusted with water to a concentration of 0.05% by weight of perfume (page 7, last line to page 8, line 1). The amount of demulsifier added is adjusted depending on the concentration assumed to be present in the actual manufactured article, for example a detergent composition, and is *"in principle the maximum amount which can be added as a ratio to the perfume in the form of the manufactured article"* (page 8, lines 7 to 10). This rather unclear definition is clarified by the description of the application of this method to laundry powder detergents in paragraphs [0068] to [0072], from which it can be gathered that the amount of demulsifier added in the test should be such that the weight ratio of the demulsifier to the perfume is the same as in the manufactured article, which is in this specific case a laundry powder detergent.
- 1.4.2 The Board thus is satisfied that, at least for the given pairs of emulsifier and demulsifier and the given intended use of the composition, the skilled person would be able to repeat and carry out the above test on the basis of the information given in the description.

- 1.5 However, it remains to be assessed whether this information is sufficient for identifying other suitable pairs of emulsifier and demulsifier, in particular for use in a laundry powder detergent according to claim 3.
- 1.5.1 Table 1 of the patent in suit (page 11) reports some experiments carried out following said test procedure. From Table 1 it appears, on the one hand, that the emulsions containing a protein-based emulsifier (Na salt of casein) or a cellulose-based emulsifier (cationated hydroxyethyl cellulose) are indeed demulsified (with a reported demulsification index of 0.0 in both cases) by using, respectively, a protease (KAP) or a cellulase (KAC) as demulsifier. On the other hand, none of the emulsions containing a lipophilic starch or gum arabic as emulsifier is successfully demulsified irrespective of the type of demulsifier used (alkali, KAP or KAC; reported demulsification indices of more than 0.3 in each case); therefore, they are considered unsuitable for the purposes of the invention.
- 1.5.2 Moreover, it is not shown in the patent in suit that the use of alkali as demulsifier leads to a demulsification which is acceptable for the purposes of the invention. All the demulsification indices reported for alkali (see Table 1, results in the row "Evaluation 3: Alkali") are far above the value of 0.3, irrespective of the type of emulsifier used, and even when using the emulsifier (Na salt of casein) specifically suggested on page 6, line 3 of the description. Furthermore, the patent does not contain



any example illustrating the use of an acid of whatever type as demulsifying agent.

1.5.3 The Board remarks that the description of the patent in suit does not contain any teaching, guidance or criteria on how to modify or replace those pairs of emulsifier and demulsifier which lead to unsuccessful results according to Table 1 (in terms of demulsification evaluated according to the test described in the patent), in order to achieve satisfactory results. The skilled person, even taking into account the whole description of the patent in suit, will thus realise that, with the exception of the pairs of emulsifier and demulsifier suggested explicitly in the description and shown to be effective in Table 1 of the patent, the demulsification test of the description has to be carried out for any pair of emulsifier and demulsifier intended to be contained, for example, in a specific detergent composition, in order to ascertain whether the envisaged demulsifier is effective in the sense that it positively breaks up the perfume emulsion upon use and thus falls within the terms of claims 2 and/or 3.

1.5.4 The number of conceivable combinations of emulsifiers and demulsifiers encompassed by the definitions in claims 2 and 3 is almost unlimited.

Therefore, in order to identify further suitable pairs of emulsifier and demulsifier across the whole breadth of claims 2 and 3, the skilled person is obliged to perform a research program, which is so extensive that it must be regarded as imposing an undue burden.

1.6 Therefore, in the Board's judgement, the patent in suit does not disclose the claimed invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (Article 100(b)/83 EPC 1973).

The main request thus is not allowable.

*Respondent's auxiliary request 1*

2. Admissibility of the request

2.1 This request was submitted with the reply to the statement of the grounds of appeal and is identical to auxiliary request 1 filed during the opposition proceedings under cover of a letter dated 15 February 2011.

It comprises claims amended by incorporation of additional features as a precautionary measure in case the objections raised by the Appellant against the claims as granted (main request) were to be found conclusive.

2.2 Under these circumstances, the fact that the Appellant considered these claims to be objectionable under Article 123(3) EPC does not justify the non-admittance of this request into the proceedings.

2.3 The Board thus decided to admit this request into the proceedings (Article 114(2) EPC and Articles 12(2) and (4) RPBA).

3. Allowability of the amendments - Article 123(3) EPC

3.1 Claim 3 according to the request at issue concerns a detergent composition comprising the perfume composition of claim 2, which composition differs from that of claim 2 according to the main request (i.e. as granted) only insofar as component a) is defined as follows:

*"a) a perfume particle obtainable by dispersing and immobilizing a perfume in the form of droplets by emulsifying with one or more substances having emulsification actions in a water-soluble matrix-forming agent, and drying the emulsion".*

This claim thus requires that the emulsion is dried and that the perfume must be present as component of solid particles. However, the definitions of the emulsifier and demulsifier components contained in such a composition are the same as in claim 2 according to the main request. The other claims of the auxiliary request 1 differ in the same way from the corresponding claims of the main request.

3.2 The Appellant submitted that the claims at issue would contravene the requirements of Article 123(3) EPC, since the granted claims related only to a perfume emulsion, i.e. to a liquid composition comprising perfume droplets emulsified therein, and not to perfume particles.

3.3 The Board remarks that claim 2 as granted (see point III supra) is directed to a perfume composition comprising an emulsified perfume and at the same time a demulsifier for the emulsified perfume. This claim is

not explicitly limited to a specific form of the perfume component and *prima facie* encompasses liquid emulsions of the perfume, i.e. emulsions in the usual meaning of the term. However, for a skilled reader, it would be unclear how a liquid emulsified perfume could co-exist, i.e. remain in emulsified form, in the presence of the demulsifier without some additional protective measures being taken. Since such measures are not addressed in the claim itself, this wording must be construed in the light of the description.

- 3.4 The description of the patent in suit (see paragraph [0022]) teaches explicitly that the state of the emulsified perfume is not particularly limited and that it can be used in the form of "*particles*".

Therefore, the Board finds that, by considering these explanations given in the description, the expression "*perfume emulsified with*" in granted claim 2 must be understood to encompass solid particles comprising the perfume component.

- 3.5 Based on this construction of the expression "*perfume emulsified with*" contained in claim 2 as granted, the Board concludes that the claims according to auxiliary request 1 do not extend the protection conferred by the granted claims and comply with the requirements of Article 123(3) EPC.

#### 4. Sufficiency of disclosure

- 4.1 The Board remarks that, compared to claim 3 as granted, claim 3 at issue does not contain any additional limitation as to the nature of the emulsifiers and

demulsifiers to be jointly included in the detergent composition.

Consequently, the considerations under points 1.1 to 1.5.4 above apply *mutatis mutandis* to the invention as defined in claim 3 at issue.

- 4.2 Hence, the patent in suit does not disclose the claimed invention according to claim 3 at issue in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (Article 100(b)/83 EPC 1973).

Consequently, auxiliary request 1 is not allowable either.

#### *Respondent's auxiliary request 2*

#### 5. Admissibility

- 5.1 The Respondent submitted an amended second auxiliary request during oral proceedings in order to overcome new objections raised during the debate on the issues of sufficiency of disclosure and of Articles 123(2) and (3) EPC.
- 5.2 The amendments to the claims of auxiliary request 1 are easy to understand, based on the original description, are at first sight allowable under Article 123(2) and (3) EPC, and overcome the objections raised under Article 100(b)/83 EPC 1973 without increasing the complexity of the case.

5.3 Therefore, the Board decided to admit this request into the proceedings despite its late filing (Article 114(2) EPC and Article 13(3) RPBA).

6. Allowability of the amendments

6.1 Claim 1 of this request (see point VIII supra) relates to a perfume composition comprising perfume components encapsulated in a water-soluble matrix obtainable by *"dispersing or dissolving a water-soluble matrix-forming agent in water, adding an emulsifier and a perfume thereto, emulsifying the mixture to form an emulsion and then spray-drying the emulsion to form perfume particles in which the perfume components are encapsulated in the water-soluble matrix"* and a demulsifier, wherein the pairs of emulsifier and demulsifier are selected from cellulose-based emulsifier and cellulase or protein-based emulsifier and protease.

Claim 2 relates to a detergent composition comprising the perfume composition of claim 1.

Dependent claim 3 relates to particular embodiments of the detergent composition of claim 2, and claim 4 relates to a process for further treatment of the inventive detergent composition of claim 2 or 3 (see point VIII supra).

6.2 No objections under Article 84 EPC 1973 or Articles 123(2) or (3) EPC were raised by the Appellant against this set of claims during oral proceedings.

6.2.1 The Board is satisfied that the amendments to the claims do not give rise to objections under Article 84 EPC 1973.

6.2.2 The amendments find also support in the application as originally filed. Reference is made in particular to page 4, lines 4 to 7 in combination with page 8, lines 24 to 25 and to page 10, lines 4 to 21, as well as to page 6, lines 19 to 24, of the original application published as WO 2004/106479 A1.

Therefore, they meet the requirements of Article 123(2) EPC.

6.3 Moreover, the incorporation of additional features narrows the ambit of the claims as granted. As regards the reference, in claim 1 at issue, to "*spray-drying the emulsion to form perfume **particles** in which the perfume components are encapsulated*", the considerations under points 3.1 to 3.5 above apply *mutatis mutandis*.

Consequently, the amended claims also meet the requirements of Article 123(3) EPC.

7. Sufficiency of disclosure

7.1 The Appellant did not raise an objection under Article 100(b) EPC 1973 with respect to the request at issue.

7.2 The Board remarks that the pairs of emulsifiers and demulsifiers covered by the claims are restricted in this request to two classes of pairs explicitly indicated in the description of the patent (paragraph

[0020]) as being suitable for performing the invention, i.e. a cellulose-based emulsifier in combination with a cellulase as demulsifier and a protein-based emulsifier in combination with protease as demulsifier. The specific examples (Na salt of casein/KAP protease and cationated hydroxyethyl cellulose/KAC cellulase) reported in Table 1 of the patent in suit show that such pairs are able to pass the demulsification test of the patent in suit.

7.3 Therefore, the Board is convinced that the skilled person, following the teaching of the patent in suit, and using his common general knowledge regarding the specific classes of emulsifiers and demulsifiers to be used according to the restricted claim 1 at issue, would be able to find without undue burden further pairs of emulsifier and demulsifier which would be suitable for carrying out the invention.

7.4 Consequently the claims at issue are not objectionable under Article 100(b) EPC 1973.

## 8. Novelty

The Board is satisfied that the claimed subject-matter is novel (Articles 52(1) and 54(1)(2) EPC 1973). Since this was not in dispute, a detailed reasoning needs not to be given. Differences over the prior art relied upon by the Appellant become apparent in the following considerations concerning inventive step.

## 9. Inventive step



- 9.1 The invention concerns a perfume composition comprising an emulsified perfume, a detergent composition comprising said perfume composition and a process comprising a step of applying perfume to said detergent composition (see claims 1, 2 and 4 at issue).
- 9.2 For the Board document D4 constitutes the closest prior art for the evaluation of inventive step. This was also common ground between the parties.
- 9.2.1 More particularly, D4, like the patent in suit, concerns the provision of a perfume composition to be used in laundry and cleaning products which substantially releases the perfume odour during use and provides good odour intensity to dried washed articles (see paragraphs [0001], [0009] and [0010] of D4).
- 9.2.2 Preferably, the perfume is provided in the form of particles wherein the perfume is encapsulated in a water-soluble matrix (see paragraphs [0032] and [0048]). More particularly, D4 discloses perfume compositions wherein the perfume components are encapsulated in a water-soluble matrix obtained by dispersing or dissolving a modified starch water-soluble matrix-forming agent in water, adding a perfume thereto, emulsifying the mixture to form an emulsion and then spray-drying the emulsion to form particles comprising the perfume (see paragraph [0048]). In this case the water-soluble matrix forming agent acts also as an emulsifier (see e.g. paragraph [0044]).
- 9.2.3 Such a composition is used in a laundry detergent product as disclosed, for example, in example 1 of D4. The laundry detergent composition of example 1 contains

an encapsulated perfume HIA1, prepared as disclosed in paragraph [0048] (see page 22, lines 53 to 54 and page 23, lines 1 to 3) and also cellulase and protease enzymes, which are the demulsifiers specified in claim 1 at issue. For the Board, this composition is closer to the claimed subject-matter than composition LL of example 9, also cited by the Appellant during oral proceedings, which contains a protease enzyme but not a cellulase. By virtue of the encapsulation of the perfume component, the latter is made storage stable, even when provided as an ingredient of a detergent composition (see paragraph [0011] of D4).

- 9.3 The technical problem underlying the invention in the light of D4 can be seen in the provision of further storage stable perfume particles in which the perfume components are encapsulated in a water-soluble matrix which provide upon use an appropriate fragrance level to the dried washed articles.

At the oral proceedings this was not disputed by the Respondent, who acknowledged that the patent in suit did not contain any comparison with regard to a composition as disclosed in document D4 representing the closest prior art (see point 8.2 above). Therefore, it was also undisputed that it was not possible to assess whether or not a composition according to claim 1 at issue provides better storage stability or better fragrance level on the dried washed fabrics than the composition of document D4.

- 9.4 As a solution to the stated technical problem, the patent in suit proposes a perfume composition according to claim 1, which is characterized in particular in

*that "the emulsification action substance is a cellulose-based emulsification action substance and the demulsifying agent is cellulase or the emulsification action substance is a protein-based emulsification action substance and the demulsifying agent is a protease."*

- 9.5 The Board is satisfied that the claimed subject-matter effectively solves the technical problem mentioned above for the following reasons:
- 9.5.1 The examples of the patent in suit show that particles of encapsulated perfumes containing a cellulose-based or a protease-based emulsifier are able to provide good perfume benefits (appropriate fragrance level) on spin-dried fabrics when used in a detergent composition containing also the corresponding demulsifier according to claim 1 at issue, i.e. a cellulase or a protease, respectively. The achieved perfume benefits are comparable to or better than those provided by a directly perfumed washing powder not containing any encapsulated perfume particles and are better than those obtained by using other pairs of emulsifier and demulsifier not in accordance with the claims at issue. Reference is made in this respect to the values indicated in Table 2 (examples 1 and 2 vs. comparative examples 1 to 3) for the fragrance of spin-dried cloth, as well as to the results reported in Tables 3 and 4 of the patent in suit.
- 9.5.2 The odour of the powder detergent itself appears to be stronger for the directly perfumed detergent base than for the detergent powder containing the encapsulated perfume. This shows that the encapsulated perfumes are

protected and more stable in the detergent powder, which fact is confirmed by the comparative data reported in Table 3.

9.6 Hence it remains to be assessed whether the claimed solution was obvious in the light of the prior art relied upon by the Appellant.

9.6.1 Since the water-soluble matrix forming agent of document D4 is by itself capable of emulsifying the perfume components, D4 does not explicitly suggest adding additional emulsifiers. D4 teaches, however, that polyhydroxy compounds selected from alcohols such as sorbitol, plant-type sugars, lactones, monoethers and acetals can be added to the modified starch matrix-forming agent for lowering the softening point before spray-drying (see paragraph [0050] of D4). Contrary to what was stated by the Appellant, the Board cannot find in this passage any explicit or implicit reference to a cellulose-based emulsifier. In fact, it is clear from the same paragraph of D4 that the polyhydroxy compound is not added to contribute to the emulsification of the perfume components but for lowering the softening point of the modified starch water-soluble matrix-forming agent. In this context, the expression "plant-type sugar" is not considered to relate to high molecular weight compounds such as cellulose-based emulsifiers but rather to plant-type di- or oligosaccharides.

Therefore, this passage of D4 does not suggest adding any additional emulsifier of the types required by the claims at issue within the encapsulated perfume particles.

9.6.2 According to the teaching of document D4 it was believed that, upon dissolution of the encapsulated perfume in water, the modified starch swells and forms an emulsion of perfume droplets, modified starch and water (see paragraph [0053]), the modified starch "being the emulsifier and emulsion stabilizer". The Board finds that the skilled person, aware of this teaching, would rather avoid adding any additional emulsifier which could potentially modify this functionality of the modified starch emulsifier.

For similar reasons, it would not be obvious for the skilled person to include CMC, a cellulose-based emulsifier used in the detergent base composition of D4, as an emulsifier within the encapsulated perfume components with the expectation of obtaining a product also providing good perfume benefits on the dried washed articles.

9.6.3 The Board remarks also that D4 did not contain any suggestion that the enzymes contained in the detergent base could contribute to the demulsification of the emulsion formed upon dissolving the encapsulated perfume in water in order to provide appropriate perfume benefits to the washed articles after drying.

9.6.4 Therefore, the skilled person would not have found any hint in document D4 to add to the modified starch matrix-forming agent of the encapsulated perfume a different material which could be degraded by a corresponding enzyme present in the detergent base. The Board thus accepts the argument of the Respondent that the skilled person could have arrived at the claimed invention only by using hindsight.

9.6.5 In this respect the Board also finds, that even assuming for the sake of argument that the skilled person, trying to solve the stated technical problem, could think of replacing the modified starch matrix-forming emulsifier used in D4 with other possibly known water-soluble matrix-forming emulsifiers, he would not expect that the pairs of emulsifier and demulsifier for the perfume components prescribed by claim 1 at issue are able to provide upon use satisfactory and better perfume benefits to the dried washed articles than other pairs outside the claimed invention, as shown by the comparative tests reported in Table 2 of the patent in suit (see comparative examples 2 and 3).

9.7 The Board concludes that the subject-matters of claims 1 and 2 of the request at issue involve an inventive step (Articles 52(1) and 56 EPC 1973).

Dependent claim 3 relates to particular embodiments of the inventive detergent composition of claim 2, and claim 4 relates to a further treatment of the inventive detergent composition of claim 2 or 3. By implication, their subject-matters also involve an inventive step.

**Order**

**For these reasons it is decided that:**

The case is remitted to the department of first instance with the order to maintain the patent on the basis of claims 1 to 4 of the auxiliary request 2 submitted during oral proceedings, figure 1 of the granted patent and a description to be adapted.

The Registrar:

The Chairman:

D. Hampe

B. Czech